



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/EP98/08035 <b>(22) International Filing Date:</b> 14 December 1998 (14.12.98)  <b>(30) Priority Data:</b> 1007871 23 December 1997 (23.12.97) NL 98201003.5 30 March 1998 (30.03.98) EP  <b>(71) Applicant (for all designated States except US):</b> HANDELS- MAATSCHAPPY HEA N.V. [BE/BE]; 72, Meerdorp, B-2321 Hoogstraten (BE).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> LOOYEN, Gerardus, Maria, Johannes [NL/NL]; Molbord 24, NL-3224 BL Hellevoetshuis (NL). LUSSE, Mirjam [NL/NL]; Molbord 24, NL-3224 BL Hellevoetshuis (NL).  <b>(74) Common Representative:</b> HANDELSMAATSCHAPPY HEA N.V.; 72, Meerdorp, B-2321 Hoogstraten (BE).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  Published With international search report.
<b>(54) Title:</b> AN IMPLEMENT FOR SLOWING DOWN OR STABILIZING OF AN OBJECT   <b>(57) Abstract</b> <p>The invention relates to an implement for slowing down or stabilizing an object, which implement comprises a first shaft (11) which is rotatably bearing-supported in a housing (1), on which first shaft (11) there is arranged the object which has to be slowed down or stabilized, as well as a slowing down or stabilizing weight (18; 21) which, at least during operation of the implement, is arranged eccentrically and rotatably on the first shaft (11).</p>		

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# AN IMPLEMENT FOR SLOWING DOWN OR STABILIZING OF AN OBJECT

The invention relates to an implement for slowing down or stabilizing an object.

5       Such an implement is e.g. known from EP-A-0172792. In this application a stabilizing structure is described with which it is possible to keep a carrier which has a mark, and which is arranged in a hubcap of a vehicle in a stable position relatively to the ground. For this purpose the  
10       carrier is coupled via a freely rotatable shaft with a stabilizing weight. The known stabilizing structures have the disadvantage that during slowing down or accelerating, which e.g. occurs during braking or driving away or driving on a bad road, the structures cannot prevent the carrier with the  
15       mark on it swinging. In the worst case it can occur that the stabilizing weight starts turning around with the wheel, which causes the information on the carrier to be no longer visible.

20       The object of the present invention is an implement for slowing down or stabilizing an object, in which the above mentioned disadvantage does not occur or is at least minimized.

25       According to the invention this is achieved because the implement comprises a first shaft which is rotatably bearing-supported in a housing, on which first shaft there is arranged the object which has to be slowed down or stabilized, as well as a slowing down or stabilizing weight

which, at least during operation of the implement, is arranged eccentrically and rotatably on the first shaft. Due to the fact that the slowing down or stabilizing weight is arranged rotatably and eccentrically relatively to the object which has to be slowed down or stabilized, it is prevented that the object during slowing down or accelerating starts swinging and/or shaking.

For reasons of simplicity there is in the text which follows hereafter only referred to slowing down or stabilizing structures which are applicable in a hubcap of a car or a truck, but it will be clear that the invention is not limited to this, and that the structures are also applicable to slow down or stabilize objects relative to the ground, in other rotatable implements e.g. vans, wheels of an perambulator, steering wheels et cetra.

According to a feature of the invention there is arranged rotatably to a second shaft the slowing down or stabilizing weight, which second shaft is arranged eccentrically on the first shaft, while preferably said first and second shaft are made of one piece of material.

In a preferred embodiment according to the invention the distance between the centre line through the first shaft and the centre line through the second shaft is between 1 and 2 millimetres and is preferably about 1,5 millimetres, while the weight of the slowing down or stabilizing weight is between 30 and 40 grams and preferably about 35 grams. The above mentioned embodiment has appeared to be very suitable in an hubcap of a car. The carrier has in this case a diameter of about 55 millimetres and is about 1 millimetre thick. It is clear that it is of course possible that the carrier has another thickness or is dimensioned differently.

According to another feature of the invention the slowing down or stabilizing weight is constituted by a disc, which is made of metal, preferably rustproof metal, and which disc has a diameter of about 35 millimetres and a thickness of about 4 millimetres. Depending on the embodiment, the above mentioned weight and dimensions can be different.

According to a feature of the invention the bearings

have an outer diameter of about 16 millimetres, while the inside ring of the bearings has a bore of about 4 millimetres.

5 In a second embodiment of the invention, which embodiment is particularly suitable for bigger carriers with information, such as e.g. hubcaps of trucks, the slowing down or stabilizing weight is constituted by a spiral spring.

10 In accordance with another aspect of the invention the windings of the spiral spring are situated in a flat plane and the spiral spring is made of relatively thin and flat spring steel which has a width of about 4 millimetres, the spiral spring furthermore comprises 7 windings. In order to realise a simple mounting of the spiral spring, preferably with its inner winding to the first shaft, the first shaft  
15 comprises at one end a groove. According to a feature of the invention during operation the spiral spring is situated in an approximately vertical plane, while the spiral spring has such a dimensions and a spring constant that the spiral spring due to its own weight prolapses downwardly. In this way their is realised a stabilizing weight which is situated eccentrically relatively to the shaft with the object. When  
20 using a spring it is not necessary to have a second shaft which is arranged eccentrically relatively to the first shaft.

25 According to an other aspect of the invention the carrier is arranged centrically on the first shaft, while the carrier is preferably a round disc.

30 According to yet another feature of the invention the object and/or the carrier and/or the housing comprises one or more reflectors. The reflectors are preferably arranged on a circular carrier, spaced from each other.

35 According to a further aspect of the invention the housing comprises a first closed compartment in which the object is arranged as well as a second closed compartment in which the slowing down or stabilising weight is arranged. Due to the fact that the compartments are sealed off, it is prevented that dirt, water, dust et cetra, can enter into the compartments. According to a further aspect of the invention

the diameter and the depth of the second compartment are such that the slowing down or stabilizing weight fit in it with a little play, or that the second compartment comprises a third compartment which has a diameter and depth which is such that the slowing down or stabilizing weight fits in it with a little play. In the event that the slowing down or stabilizing weight gets disconnected it is thus prevented that the turning object loses its stability, as a result of which it can be damaged.

In order to have a good visible object, the first compartment has a transparent front cover, which preferably does not reflect light. The transparent cover is detachable in order to change the object or mark in the first compartment.

According to an aspect of the invention the shape of the housing is e.g. round or square or hexagonal. According to yet another feature of the invention the housing comprises fastening means with the aid of which the housing can be arranged in or on a wheel or a hubcap of a vehicle.

The invention further relates to a housing which is suitable for accommodating an implement for slowing down or stabilizing an object as described above and further to a hubcap which is suitable for receiving and/or arranging of an housing as described above.

The invention further relates to a hubcap which comprises an opening and/or recess and/or fastening means for accommodating and/or fixing the housing, as described above.

The invention also relates to a top cap which can be arranged on a bolt or a nut, that are suitable for fixing a wheel to a vehicle, which top cap comprises a reflector.

The invention will be explained hereafter on the basis of the accompanying drawings.

Fig. 1 shows a cross-section of the housing with inside a first embodiment of an implement according to the invention;

Fig. 2 shows a front view of the housing according to figure 1, in which there is arranged a circular reflector as

object which has to be stabilized;

Fig. 3 shows the system of axles of the stabilizing structure;

Fig. 4 shows a cross-section of a top cap for a bolt or a nut of a hubcap, which is provided with a reflector;

Fig. 5 shows a top view of the top cap according to figure;

Fig. 6 shows a cross-section of the housing with inside a second embodiment of an implement according to the invention, in which the slowing down or stabilizing weight is realized by a spiral spring;

Fig. 7 shows a rear view of the implement according to figure 6, when this implement is flat on the ground;

Fig. 8 shows exploded view of a car wheel with a hubcap, the housing, the object and the transparent front cover of the housing.

Figure 1 shows a cross-section of a housing 1 in which an implement for slowing down or stabilizing an object, in the future stabilizing structure 2 called is arranged. The housing 1 is round of shape and preferably made of artificial material. The housing 1 comprises a first compartment 3 which by means of an intermediate wall is separated from a second compartment 4. In the intermediate wall there is an opening 5 in which there is arranged the stabilizing structure 2 by means of e.g. gluing or jamming. The housing 1 is furthermore provided with fastening means 6 with the aid of which the housing 1 in e.g. a hubcap or a wheel cap of a car can be arranged. The second compartment 4 can be hermetically closed by means of back cover 7. The first compartment 3 sealed off by means of a detachable transparent front cover 8.

In the second compartment 4 there is further a third compartment 9 in which with a little play part of the stabilizing structure 2 is arranged.

Figures 1 en 3 show the stabilizing structure 2 which comprises a system of axes 10 with a first shaft 11 that is eccentrically connected to a second shaft 12. In the present embodiment the distance between the centre lines through the first- and second shaft is about 1,5 millimetres.

As shown in figure 3, the first shaft 11 comprises a stub axle 13 on which there is mounted a carrier 14. As shown in figure 2 the carrier 14 can be provided with a circular reflector 15. It will be clear that on the carrier 14 there can be mounted every other object, image, advertising et cetera.

As shown in figure 1 there is arranged on the first shaft 11 a bearing 16 which in its turn is arranged in the opening 5 of the intermediary wall of the housing 1. On the second shaft 12 there is arranged a second bearing 17, around which, rotatably, the slowing down or stabilizing weight 18 is arranged. In the present embodiment the weight 18 is constituted by a round metal disc, preferably rustproof metal, with a weight of about 35 grams. The carrier 14 has a thickness of about 1 millimetre and diameter of about 55 millimetres. The weight of the carrier 14 and the information on it, is between 3 - 100 grams. It will be clear that the above mentioned measures and weights can be different when there is chosen for another implement according to the invention.

In figures 4 and 5 there is shown a cross-section and a top view of a top cap 19 which can be arranged on a bolt or a nut for fixing a wheel. The top cap 19 comprises an upperside 20 which is reflecting. The reflecting upperside 20 is preferably constituted by a reflector which has the colour amber.

In figures 6 and 7 there is shown a second embodiment of an implement for slowing down or stabilizing an object according to the invention. The housing 1 in which the stabilizing structure 2 is arranged is merely the same as that of the first embodiment. The housing 1 is therefore shown schematically while the same parts are given the same reference numbers. In the second embodiment the stabilizing structure 2 comprises a passing through shaft 20 which is arranged with a first bearing 16 in a opening 5 in the intermediate wall of the housing 1. On the opposite end of the passing through shaft 20 than where the carrier 14 is arranged, there is arranged the slowing down or stabilizing

weight in the form of a spiral spring 21. In order to arrange the spiral spring 21 on the passing through shaft 20 in a simple manner, the passing through shaft comprises a groove 22 near its end in which groove 22 the inner winding of the spiral spring 21 can be arranged. As shown in figure 7, in the present embodiment the spiral spring 21 comprises 7 windings. The thickness and width of the windings and the spring constant of the spring are chosen so that, as shown in figure 6, the spiral spring 21 at least during operation prolapses downwardly due to its own weight. During operation the passing through shaft 20 is rotatably relatively to the spiral spring 21 while the spiral spring 21 realises the eccentrically counter weight.

Finally there is shown in figure 8 how the housing 1 with the stabilizing structure are arranged in a hubcap 23 of a wheel for a vehicle. As shown in the figure the object 25, in this case an advertising disc, can have a diameter which is larger than the carrier 14. Furthermore it is possible that part of the housing of the stabilizing structure 2 is constituted by the hubcap 23. The transparent front cover can instead of being arranged on the housing also be arranged on the hubcap.

## CLAIMS

1. An implement for slowing down or stabilizing an object, characterized in that the implement comprises a first shaft (11) which is rotatably bearing-supported in a housing (1), on which first shaft (11) there is arranged the object which has to be slowed down or stabilized as well as a slowing down or stabilizing weight (18;21) which, at least during operation of the implement, is arranged eccentrically and rotatably at the first shaft (11).

2. An implement according to claim 1, characterized in that on a second shaft (12) there is arranged the slowing down or stabilizing weight (18), which second shaft is arranged eccentrically to the first shaft (11).

3. Implement according to claim 2, characterized in that the first and second shaft (11,12) are made of one piece.

4. An implement according to claim 2 or 3, characterized in that the distance between the centre line of the first shaft (11) and the centre line to the second shaft (12) is between 1 and 2 millimetres and preferably 1.5 millimetres.

5. An implement according to one of the preceding claims, characterized in that the weight of the slowing down- or stabilizing weight (18) is between 30 and 40 grams and preferably about 35 grams.

6. An implement according to 4 or 5, characterized in that the distance between the centre lines of the first- and second shaft (11,12) is about 1.5 millimetres and that the weight of the slowing down or stabilizing weight is about 35 grams.

7. An implement according to one of the preceding claims, characterized in that the slowing down or stabilizing weight (18) comprises a disc.

8. Implement according to claim 7, characterized in that the disc is made of metal, preferably rustproof metal.

9. An implement according to claim 8, characterized in that the diameter of the disc is about 35 millimetres while it has a thickness of about 4 millimetres.

10. Implement according to one of the preceding claims, characterized in that the bearings (16,17) are ball bearings.

11. An implement according to claim 10, characterized in that the bearings (16,17) have an outer diameter of about 16 millimetre, while the inside ring of the bearings (16,17) has a bore of about 4 millimetres.

12. An implement according to claim 1, characterized in that the slowing down or stabilizing weight is constituted by a spiral spring (21).

13. Implement according to claim 12, characterized in that the windings of the spiral spring (21) are situated in a flat plane.

14. An implement according to claim 12 or 13, characterized in that the spiral spring (21) is made of relatively thin and flat spring steel which has a width of about 4 millimetres.

15. An implement according to one of the claims 12 - 14, characterized in that the spiral spring (21) comprises 7 windings.

16. An implement according to one of the claims 12 - 15, characterized in that the spiral spring (21) is fixed to the first shaft (11) preferably with its inner winding.

17. An implement according to claim 16, characterized in that the end of the first shaft (11) comprises a groove (22) for fixing the spiral spring (21).

18. An implement according to one of the claims 12 - 14, characterized in that during operation the spiral spring (21) is situated in an approximately verticle plane while the spiral spring (21) has such a dimension and spring constant that the spiral spring (21) due to its own weight prolapses downwardly.

19. An implement according to one of the preceding claims, characterized in that the object is arranged centrically on the first shaft (11).

20. An implement according to one of the preceding claims, characterized in that the object comprises a carrier (14) which is arranged on the first shaft (11).

5 21. An implement according to claim 20, characterized in that the carrier (14) is constituted by a round disc.

10 22. An implement according to claim 21, characterized in that the disc has a diameter of about 55 millimetre and a thickness of about 1 millimetre and a weight of about 35 grams.

23. An implement according to one of the preceding claims, characterized in that the object and/or the carrier (14) and/or the housing (1) comprises one or more reflectors.

15 24. An implement according to claim 23, characterized in that the reflectors are arranged on a circular carrier (15), spaced from each other.

20 25. An implement according to one of the preceding claims, characterized in that the housing (1) comprises a first compartment (3) in which the object is arranged as well as a second, closed compartment (4) in which the slowing down or stabilizing weight (18;21) is arranged.

25 26. An implement according to claim 25, characterized in that the diameter and depth of the second compartment (4) are such that the slowing down or stabilizing weight (18;21) fit in it with a little play, or that the second compartment (4) comprises a third compartment (9) which has a diameter and depth which is such that the slowing down- or stabilizing weight (18;21) fit in it with a little play.

30 27. An implement according to claim 25 or 26, characterized in that the first compartment (3) has a transparent front cover (8) through which the object is good visible.

35 28. An implement according to claim 27, characterized in that the transparent cover (8) is detachable.

29. An implement according to one of the preceding claims, characterized in that the housing (1) is e.g. round

or square or hexagonal.

30. An implement according to one of the preceding claims, characterized in that the housing (1) comprises fastening means (6) with the aid of which the housing (1) can be arranged in or on a wheel (24) or a hubcap (23) of a vehicle.

31. A housing which is suitable for accommodating an implement for slowing down or stabilizing an object, as claimed in any one of the claims 1 - 30.

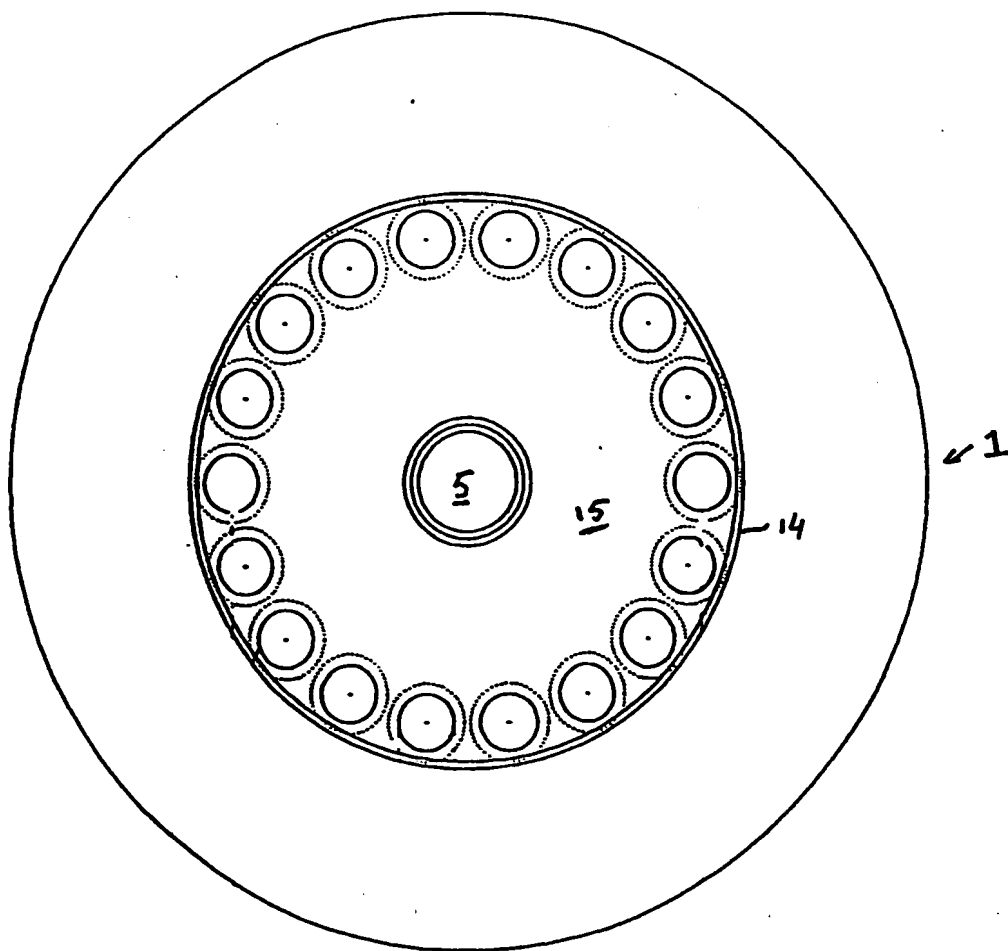
32. A hubcap suitable for receiving and/or arranging a housing (1) according to claim 31.

33. A hubcap according to claim 32, characterized in that the hubcap comprises an opening and/or a recess and/or fastening means for accommodating and/or fixing the housing (1).

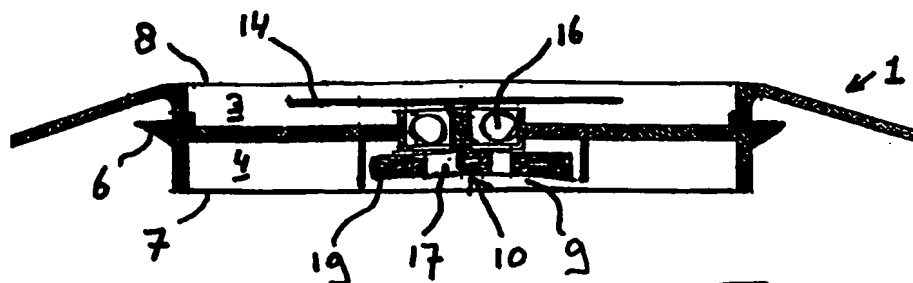
34. A top cap which can be arranged on a bolt or a nut, that is suitable for fixing a wheel to a vehicle, which top cap comprises a reflector.

35. A bolt or a nut for fixing a wheel to a vehicle, characterized in that the bolt or the nut comprises a reflector.

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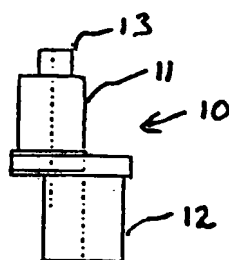


Fig 3

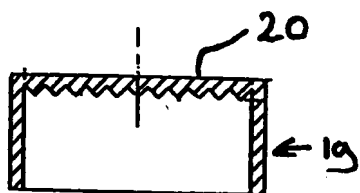


Fig 4

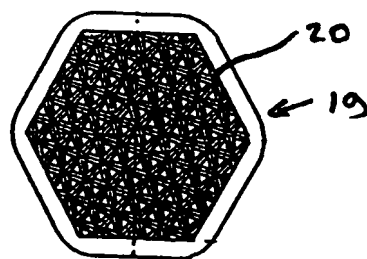


Fig 5

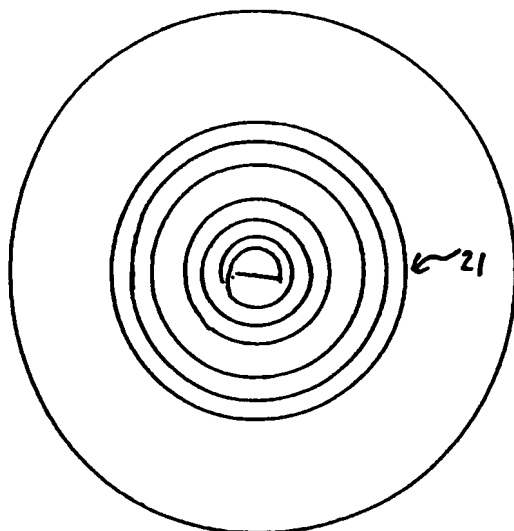


FIG 7

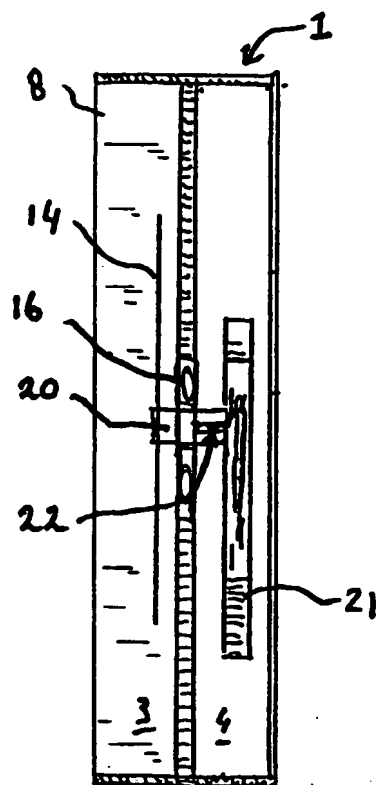


FIG 6

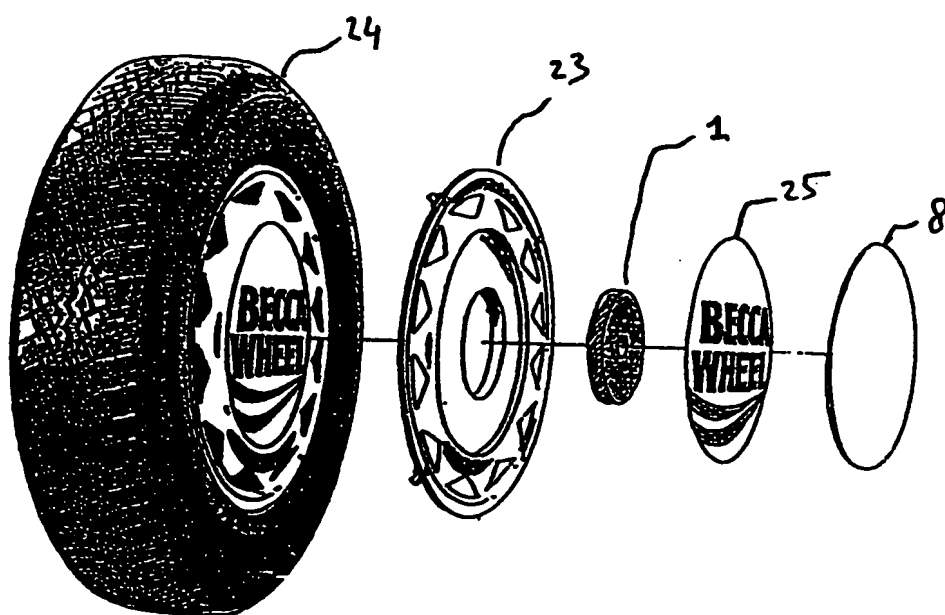


FIG 8

# INTERNATIONAL SEARCH REPORT

Int. Application No

PCT/EP 98/08035

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 B60B7/20 G09F21/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B60B G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE WPI Section PQ, Week 9723 Derwent Publications Ltd., London, GB; Class Q11, AN 97-257361 XP002099125 & NL 1 001 141 C (LOOIJEN G M J) , 11 March 1997 see abstract	1-3, 7, 19-21, 25
X	EP 0 330 534 A (PARK) 30 August 1989 see abstract; figures	1
A	FR 2 661 869 A (LEVY) 15 November 1991 see abstract; figures	1
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☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 98/08035

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